

SOURAV ROY CHOWDHURY

Personal Information

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Short Bio

I am working as a Postdoc fellow at Southern Federal University, Rostov-on-don, Russia. I have done my PhD at the Indian Institute of Engineering Science and Technology (IEST), Shibpur, India, under the supervision of Dr Saibal Ray. My thesis defence ensued on **September 24, 2020**. In PhD, I worked on the structural formation of compact objects (strange stars) and black holes. The primary goal was to study the anisotropy due to matter distribution in the stellar systems. We studied the changes in the behaviour of the stellar objects and black holes based on the General Relativity in the Finslerian Geometry. My field of interest is Theoretical physics, General Relativity, Astrophysics and Cosmology. I am presently investigating various aspects of gravitational waves of compact objects (especially magnetars), compact binary mergers, and the polarization modes in the regime of modified gravity. Nowadays, I am also interested in constraining gravity theories from gravitational waves observations.

I have already published few research paper in refereed international journal and a paper published in XXII DAE High Energy Physics Symposium as a chapter, a few papers are also in the proceeding in refereed international journals.

Education

- 2021–Present** Post Doc, SFedU, Russia.
2015–2020 Ph.D , IEST, Country.
2010–2012 M.Sc in Physics, West Bengal State University, Country.
2006–2010 B.Sc in Physics, Calcutta University, Country.
2006 Higher Secondary Education(std 10+2), WBCHSE, Country.
2004 Secondary education(std 10), WBCSE, Country.

Languages

- Mother tongue** Bengali.
Others English, Hindi.

Conference & Workshop

- 2010** “C.K.Majumdar memorial summer workshop on experimental physics” organized by Indian Association of Physics Teachers.
Venue: - Lady Brabourne College, Kolkata.
- 2013** “Gravitational wave detection using LIGO” organized by IUCAA.
Venue: - Ballygunge Science college, Kolkata.
- 2014** “Quantum correlation” jointly organized by ISI Kolkata and Vidyasagar college for Women.
Venue: - ISI,Kolkata.
- 2016** ”Introductory Workshop on Astrophysics and Cosmology”.
Aliah University, Kolkata.
- 2021** “Fundamental physics from Gravitational Waves”.
Venue: - Paris, Virtual mode.
“Theory of Gravitation and Variation in Cosmology”.
Venue: - CIRM, France.
“Current Challenges in Gravitational Physics”.
Venue: - Italy, Virtual mode.
“ICTS Summer School On Gravitational-Wave Astronomy. ”
Venue: - ICTS, Bangalore, Virtual mode.
“Workshop III: Source Inference and Parameter Estimation in Gravitational Wave Astronomy.”
Venue: - UCLA campus, Los Angeles, participated in Virtual mode.

Talk

- 2015** “Spherically symmetric electromagnetic mass model of embedding class one”, at National seminar on *Recent Trends in Cosmology & Future Challenges*, Contai, December 03-04, 2015.
- 2017** “A model for anisotropic strange stars” at National conference *Exploring the Cosmos:2016-17*, High Energy and Cosmic Ray Research Centre, NB, January 16-17, 2017.

- 2021** “Gravitational waves and the modified gravity” at 24th International Workshop *What Comes Beyond the Standard Models?*, Bled, Slovenia.
July 05-11, 2021.
- “Gravitational waves in the modified gravity” at International conference *Theory of Gravitation and Variation in Cosmology (2nd edition)*, CIRM, France.
July 26-30, 2021.

Research Work

- 2015**
- Spherically symmetric charged compact stars.
S.K.Maurya, Y.K.Gupta, Saibal Ray, Sourav Roy Chowdhury.
(Published in Eur. Phys. J. C **75**, 225 (2015))
 - Exact radiation model for perfect fluid under maximum entropy principle.
Farook Rahaman, Saibal Ray, Abdul Aziz, S.Roy Chowdhury, D.Deb.
(e-Print arXiv:1504.05838)
- 2016**
- Can strange stars mimic dark energy stars?
Debabrata Deb, Sourav Roy Chowdhury, B.K. Guha, Saibal Ray.
(e-Print arXiv: 1611.02253v1)
- 2017**
- Relativistic model for anisotropic strange stars
D.Deb, S.Roy Chowdhury, Saibal Ray, Farook Rahaman, B.K. Guha.
(Published in Annals of Physics **387**, 239 (2017))
- 2018**
- A Model for Anisotropic Strange Stars.
Debebrata Deb, Sourav Roy Chowdhury, Saibal Ray, Farook Rahaman, B.K. Guha.
(Published in book: XXII DAE High Energy Physics Symposium (2018))
 - A new model for strange star.
Debebrata Deb, Sourav Roy Chowdhury, Saibal Ray, Farook Rahaman.
(Published in Gen. Relativ. Gravit. **50**, 112 (2018))
 - Anisotropic strange stars in Tolman–Kuchowicz spacetime.
M. K. Jasim, Debabrata Deb, Saibal Ray, Y.K.Gupta, Sourav Roy Chowdhury
(Published in Eur. Phys. J. C **78**, 603 (2018))
- 2019**
- Study of compact stars with class one metric under general relativity.
S.K. Mauryaa, Sourav Roy Chowdhury, Saibal Ray, Y.K. Gupta.
(Published in the Cand. J. Phys <https://doi.org/10.1139/cjp-2018-0560>)
 - Charged anisotropic strange stars in Finslerian geometry.
Sourav Roy Chowdhury, Debabrata Deb, Farook Rahaman, Saibal Ray, B.K. Guha.
(Published in Eur. Phys. J. C **79**, 547 (2019))
- 2020**
- Anisotropic strange star in Finsler geometry.
Sourav Roy Chowdhury, Debabrata Deb, Farook Rahaman, Saibal Ray, B.K. Guha.
(Published in Int. J. Mod. Phys. D **29**, 2050001 (2020))
 - Finslerian extension of $f(R, \tau)$ gravity to anisotropic strange stellar models.
Sourav Roy Chowdhury, Debabrata Deb, Farook Rahaman, Saibal Ray.
(In communication)

- 2021
 - Noncommutative black hole in the Finslerian spacetime.
Sourav Roy Chowdhury, Debabrata Deb, Farook Rahaman, Saibal Ray, B.K. Guha.
(Published in Class. Quantum. Gravit. **38**, 145019 (2021).)
 - The stochastic gravitational wave background from magnetars.
Sourav Roy Chowdhury, Maxim Khlopov.
(Published in Universe **7**, 381 (2021).)
 - Gravitational waves in the modified gravity.
Sourav Roy Chowdhury, Maxim Khlopov.
(arXiv:2111.07704 (Prepared for Proceedings of XXIV Bled Workshop))
 - Gravitational waves in the extended theory of gravity.
Sourav Roy Chowdhury, Maxim Khlopov.
(Published in Int. J. Mod. Phys. D **30**, 2140011 (2021))
- 2022
 - An eccentric binary blackhole in post-Newtonian theory.
Sourav Roy Chowdhury, Maxim Khlopov.
(Published in Symmetry **14**, 510 (2022))
 - Polarization of gravitational waves in modified gravity.
Sourav Roy Chowdhury, Maxim Khlopov.
(In communication.)
 - The mass, spin, and rotational energy of the remnant from compact binary mergers.
Sourav Roy Chowdhury, Ranjini Mondol, Maxim Khlopov.
(Preparing for Mon. Not. R. Astron. Soc.)
 - Gravitational waves from gauge preheating under modified gravity.
Sourav Roy Chowdhury, Kumar Das.
(Preparing for Phys. Rev. D)

Professional Experience

- 2014–2019 Guest Faculty of the Seth Anandaram Jaipuria College.
- 2015–2020 Guest Faculty of the Vidyasagar College.

Course Taught/Teaching

Special theory of relativity, Electronics, Electromagnetic theory, Electrostatics, Crystallography, Quantum mechanics, Mathematical Physics, Python.

Interest

Photography, Painting, Music.

Kolkata, India
April 11, 2022.